Volunteer Lake Assessment Program Individual Lake Reports

GREAT POND, KINGSTON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	5,376	**Max. Depth (m):**	16.2	**Flushing Rate (yr^{1})**	2.4
Surface Area (Ac.):	204	**Mean Depth (m):**	3.8	**P Retention Coef:**	0.56
Shore Length (m):	6,600	**Volume (m^{3}):**	4,172,000	**Elevation (ft):**	118

TROPHIC CLASSIFICATION

Year	Trophic class
2004	MESOTROPHIC
2009	EUTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

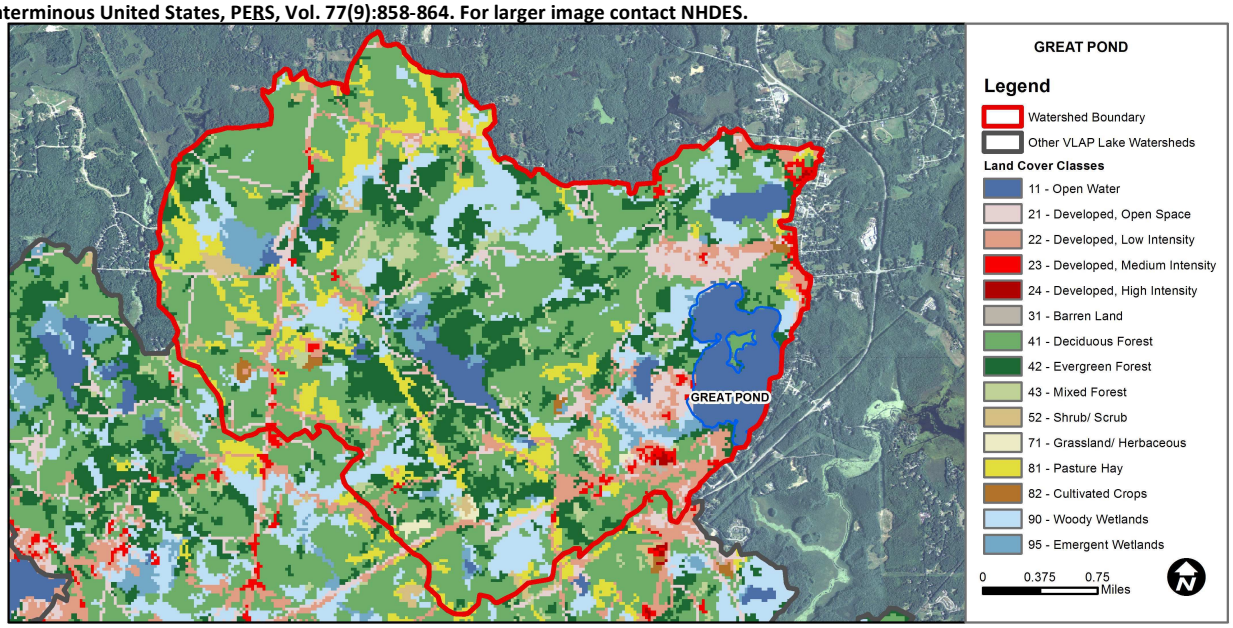
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Very Good	At least 10 samples with 0 exceedances of criteria.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

GREAT POND- GREAT POND PARK ASSOCIATION BEACH	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
GREAT POND - CAMP LINCOLN BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.
GREAT POND - CAMP BLUE TRIANGLE BEACH	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
GREAT POND - KINGSTON STATE PARK BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.
GREAT POND - KINGSTON STATE PARK BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



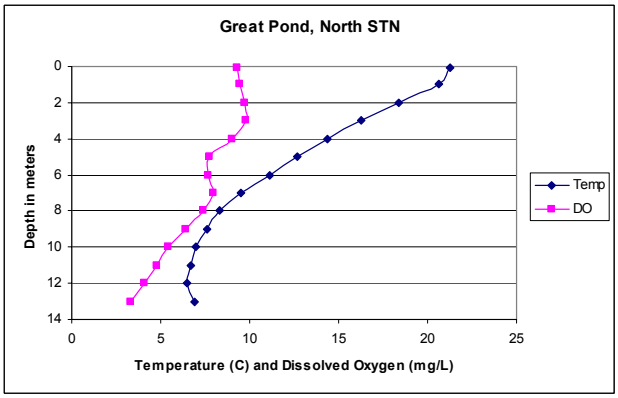
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	7.03	Barren Land	0.05	Grassland/Herbaceous	0.27
Developed-Open Space	6.22	Deciduous Forest	37.79	Pasture Hay	7.4
Developed-Low Intensity	5.99	Evergreen Forest	16.25	Cultivated Crops	0.32
Developed-Medium Intensity	1.05	Mixed Forest	2.19	Woody Wetlands	11.86
Developed-High Intensity	0.1	Shrub-Scrub	1.11	Emergent Wetlands	2.36

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
GREAT POND, NORTH STN, KINGSTON, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

- **CHLOROPHYLL-A:** Chlorophyll levels were slightly higher than 2011 and greater than NH lake median. Historical trend analysis indicates a relatively stable chlorophyll level since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and Thayer Rd. Inlet conductivities were elevated likely due to watershed development and stormwater runoff from impervious surfaces.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were average for most NH lakes; however historical trend analysis indicates the epilimnetic (upper water layer) phosphorus levels have significantly increased (worsened) since monitoring began. Ball and Thayer Rd. Inlet phosphorus levels were elevated and the turbidities were also elevated.
- **TRANSPARENCY:** Transparency increased as the summer progressed and was average for most NH lakes. Historical trend analysis indicates a relatively stable transparency since monitoring began.
- **TURBIDITY:** Metalimnetic (middle water layer) turbidity increased in July and August likely due to algal growth. Hypolimnetic (lower water layer) turbidity increased as the summer progressed likely due to natural processes. Tributary turbidity was elevated likely due to low water levels and flows.
- **PH:** pH levels were lower than desirable and potentially critical to aquatic life.
- **RECOMMENDED ACTIONS:** Do not sample tributaries if not flowing as this could result in elevated conductivity, phosphorus and turbidity levels. Educate watershed residents on managing stormwater runoff from their properties utilizing DES' "NH Homeowner's Guide to Stormwater Management".

Dissolved Oxygen & Temperature Profile



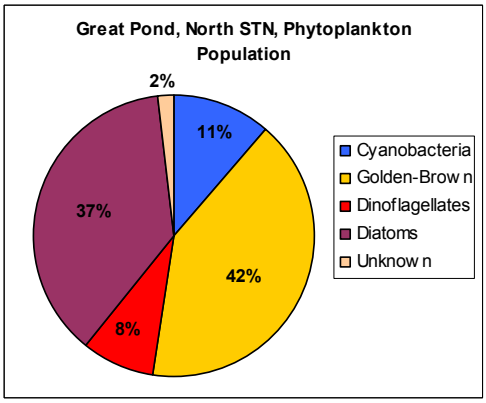


Table 1. 2012 Average Water Quality Data for GREAT POND, NORTH STN

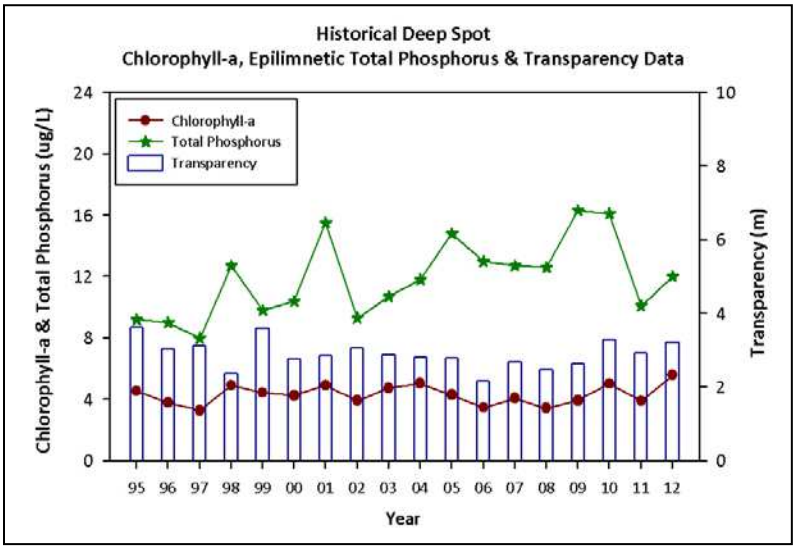
Station Name	Alk.	Chlor-a	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	uS/cm	ug/l	m		ntu	
					NVS	VS		
Ball Rd Inlet			63.6	65			1.73	5.78
Deep Epilimnion	11.6	5.74	179.4	12	3.22	3.86	0.95	6.92
Deep Metalimnion			181.5	15			1.93	6.45
Deep Hypolimnion			177.7	23			7.92	6.34
Thayer Rd Inlet			203.9	55			5.35	6.6

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Stable	Data not significantly increasing or decreasing.
Transparency	Stable	Data not significantly increasing or decreasing.
Phosphorus (epilimnion)	Degrading	Data significantly increasing (worsening).



This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:
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